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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/775,161	09/11/2015	Kazumasa Ikushima	151158	8525
38834	7590	09/21/2020	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 8500 LEESBURG PIKE SUITE 7500 TYSONS, VA 22182			RODRIGUEZ, MICHAEL P	
			ART UNIT	PAPER NUMBER
			1715	
			NOTIFICATION DATE	DELIVERY MODE
			09/21/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* KAZUMASA IKUSHIMA

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Appeal 2019-006535  
Application 14/775,161  
Technology Center 1700

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Before JAMES C. HOUSEL, JEFFREY R. SNAY, and  
DEBRA L. DENNETT, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 20–32 and 38.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

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<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as MUSASHI ENGINEERING, INC. Appeal Brief (“Appeal Br.”) filed December 31, 2018, at 1.

<sup>2</sup> Pending claims 33–37 are not before us on appeal because the Examiner has withdrawn them from consideration. Advisory Action dated September 6, 2018, at 2.

We REVERSE.<sup>3</sup>

#### CLAIMED SUBJECT MATTER

The invention relates to a liquid material discharge device that discharges constant amounts of liquid material. Spec. ¶ 1. Appellant discloses that prior liquid material discharge devices suffered from leakage of liquid material through the device discharge opening when the device is in stand-by (non-discharge) state or reduced productivity. *Id.* ¶¶ 6, 8. To address these problems, Appellant discloses that the invention includes: 1) a pressurization section including a pressurization passage through which liquid material is supplied to a liquid chamber in communication with a discharge opening; 2) a negative pressure section including a shunt passage in which a pressure can be set to be relatively lower than a pressure in the liquid chamber; and 3) a liquid valve section having a liquid material supply opening through which the liquid chamber and the pressurization passage are communicated with each other, and a liquid material release opening through which the liquid chamber and the shunt passage are communicated with each other. *Id.* ¶ 10. Appellant further teaches that the liquid valve section includes a switching valve having a first position connecting the liquid chamber and the liquid material supply opening and disconnecting the liquid chamber and the liquid material release opening, and a second position connecting the liquid chamber and the liquid material release

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<sup>3</sup> This Decision also cites to the Specification (“Spec.”) filed September 11, 2015, the Final Office Action (“Final Act.”) dated May 3, 2018, the Examiner’s Answer (“Ans.”) dated July 12, 2019, and the Reply Brief (“Reply Br.”) filed August 27, 2019.

opening and disconnecting the liquid chamber and the liquid material supply opening. *Id.*

Claim 20, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter. The limitations at issue are italicized.

20. A liquid material discharge device comprising:

a nozzle member having a discharge opening through which a liquid material is discharged;

a discharge controller;

a pressurization section including a pressurization passage through which the liquid material under pressurization is supplied to the nozzle member, a liquid reservoir, and *a pressurization source that supplies pressurized air to the liquid reservoir;*

a negative pressure section including a shunt passage in which a pressure is set to be lower than a pressure in the pressurization passage and a negative pressure source that is directly or indirectly communicated with the shunt passage; and

a liquid valve section having a liquid delivery opening in communication with the discharge opening, a liquid material supply opening in communication with the pressurization passage, and a liquid material release opening in communication with the shunt passage; and

the liquid valve section including a switching valve that is changed over between a first position and a second position, the first position establishing communication between the discharge opening and the liquid material supply opening and cutting off communication between the discharge opening and the liquid material release opening, the second position establishing the communication between the discharge opening and the liquid material release opening and cutting off the communication between the discharge opening and the liquid

material supply opening, *wherein the liquid material is held in the shunt passage in the first position and the second position.*

## REFERENCES

The Examiner relies on the following prior art:

Name	Reference	Date
Coleman	US 2,650,003	Aug. 25, 1953
Edwards et al. ("Edwards")	US 4,808,303	Feb. 28, 1989
Ono	US 5,046,666	Sept. 10, 1991
Ikushima	US 2007/0227227 A1	Oct. 4, 2007

## REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following rejections under pre-AIA 35 U.S.C. § 103(a):

1. Claims 20, 25–32, and 38 as unpatentable over Coleman in view of Ikushima (Ans. 3–5);
2. Claims 21–23 as unpatentable over Coleman in view of Ikushima, and further in view of Ono (Ans. 5–6); and
3. Claim 24 as unpatentable over Coleman in view of Ikushima, and further in view of Edwards (Ans. 6).

## OPINION

We review the appealed rejections for error based upon the issues Appellant identifies, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”). After considering the

argued claims and each of Appellant's arguments, we are persuaded of reversible error in the appealed rejections.

The Examiner finds, *inter alia*, that Coleman teaches a controlled liquid material discharge device comprising a liquid reservoir holding liquid material fed to discharge openings (nozzles) via a pressurized duct by pressurized air, a negative pressure section having a shunt duct for drawing a vacuum to withdraw liquid material away from discharge openings (nozzles), and a valve facilitating connection of discharge and recovery ducting. Ans. 3. The Examiner acknowledges that Coleman fails to teach that liquid material is retained in the shunt duct. *Id.* However, the Examiner finds that Ikushima teaches a liquid dispenser with a negative pressure system for controlling dripping and atmospheric air ingress within the system. *Id.* at 3–4. The Examiner further finds that Ikushima teaches that inadequate or excess vacuum applied in the ducting of drip-arresting systems leads to undesirable results. *Id.* at 4. To overcome these problems, the Examiner finds that Ikushima teaches “incorporation of regulators, sensors, and venting to provide a system that remains primed and ready to start and stop dispensation of fluid as needed.” *Id.* The Examiner concludes that it would have been obvious “to have incorporated the regulating, sensing, and venting features of Ikushima in the apparatus of Coleman in order to overcome the deficiencies of passive vacuum control, and to maintain the liquid discharge device in an always-ready state.” *Id.*

Appellant argues that Coleman fails to teach a pressurization source that supplies pressurized air to the liquid reservoir. Appeal Br. 4. Instead, Appellant contends that Coleman teaches that, after liquid has been evacuated from the conduits and nozzles, air is drawn by the liquid ejected

from jet nozzle 22. *Id.* The Examiner responds that Coleman’s injector 21 draws air into the system through the action of a vacuum, wherein this air has a pressure property and, therefore, is pressurized. Ans. 7. However, according to Appellant, the action of a vacuum is contrary to pressurization as used in the Specification. Reply Br. 2. Appellant also contends that when Coleman draws in air by vacuum via the injector, the liquid is not supplied to the nozzles through the liquid valve section. *Id.* at 3.

Appellant’s arguments are persuasive that the Examiner has reversibly erred in finding that Coleman teaches a pressurization source that supplies pressurized air to the liquid reservoir as recited in claim 20. In this regard, we note that Appellant distinguishes the pressurization section which includes the pressurization source from a negative pressure section. *See* Claim 20; Spec. ¶¶ 10–12. More specifically, Appellant discloses “applying a pressurization force, which is necessary to discharge the liquid material through the discharge opening, to the liquid reservoir from the pressurization source.” Spec. ¶ 14. Those skilled in the art would readily recognize that such a pressurization force would have to exceed atmospheric pressure in order to permit discharge of liquid material from the reservoir to the discharge opening. Appellant also discloses “applying a negative pressure force, which is necessary to prevent liquid dripping through the discharge opening, to the shunt passage from the negative pressure source.” *Id.* Those skilled in the art would readily recognize that such a negative pressure force would have to be less than the pressurization force and, likely, less than atmospheric pressure in order to prevent further discharge of liquid (dripping) from the discharge opening.

There is no dispute that Coleman teaches applying a vacuum or negative pressure below atmospheric pressure to draw air into the reservoir, and does not teach applying a pressure greater than atmospheric pressure to the air. However, as discussed above, interpreting this vacuum or negative pressure source of air as both a pressurization source as well as a negative pressure source as used in claim 20 is inconsistent with how those skilled in the art would interpret such in light of Appellant's Specification. As such, we find that the Examiner erred in interpreting Coleman's vacuum or negative pressure source of air as meeting the pressurization source of claim 20.

Appellant further argues that Coleman fails to teach that the switching valve's second position fails to cut off communication between the discharge opening and the liquid material supply opening. Appeal Br. 5. In this regard, Appellant contends that when Coleman's valve 9 is switched to the second position, the liquid material supply opening at 14 is still in communication with the discharge opening (nozzles 6) via conduits 23, 24, injector 21 and jet nozzle 22. *Id.* In response, the Examiner finds that the claimed cutting off feature is met in Coleman independent of whether communication can be said to indirectly exist along a secondary route in Coleman's shunting position. Ans. 7. We disagree.

As Appellant contends (Reply Br. 3), the Examiner acknowledges that Coleman's liquid material supply opening still communicates, albeit via a secondary route, with discharge openings 7. Such indirect communication is necessary to draw liquid from the discharge conduit and openings, as well as to then draw air into the system. In contrast, claim 20 recites that such communication is cut off. The Examiner fails to direct our attention to any



support in the record for interpreting cutting off communication between two structures to mean cutting off direct communication while permitting indirect communication. We note Appellant contends that such an interpretation is inconsistent with cutting off communication in the Specification. Reply Br. 4.

Appellant next argues that Ikushima fails to teach that liquid material is held in the shunt passage in the first and second valve positions. Appeal Br. 7. In this regard, Appellant contends that Ikushima's valve 3 communicates with either pressurized gas source 2 or open-to-atmosphere hole 7, and valve 6 communicates with open air. *Id.* Moreover, Appellant contends that Coleman teaches away from retaining liquid material in the shunt passage because Coleman introduces air into the circuit to provide agitation of the liquid material. *Id.* at 8. Appellant further contends that retaining liquid material in the shunt passage is inconsistent with providing a source of air to the liquid reservoir. *Id.*

In response, the Examiner finds that "Coleman does not necessarily disclose evacuating the shunting valve, and the component is otherwise capable of retaining liquid between states." Ans. 7–8. The Examiner further finds that Ikushima teaches maintaining a similar drip-arresting device in a primed state for preventing drips and unwanted ingress of air into the system, as well as improving system readiness. *Id.* at 8. Although apparently acknowledging a diversity in valve type (between Coleman and Ikushima), the Examiner concludes it would have been obvious to apply Ikushima's teaching of retention of liquid in the shunting valve to Coleman and determines that such would not defeat Coleman's other functions. *Id.*

After careful consideration of the Examiner's findings regarding Coleman and Ikushima, we find Appellant's arguments persuasive of reversible error in the Examiner's combination of these two teachings. The Examiner fails to adequately explain how liquid material could be retained in Coleman's shunt passage while providing a pressurization source that supplies pressurized air to the liquid reservoir. As discussed above, Coleman draws air into the system via the shunt passage thereby preventing any retention of liquid material therein. In addition, the Examiner does not respond to Appellant's contention that Ikushima fails to teach retention of liquid material in the shunt passage because Ikushima's valve 3 communicates with either pressurized gas source 2 or open-to-atmosphere hole 7, and valve 6 communicates with open air.

The Examiner further relies on Ono and Edwards to address features recited in claims dependent on claim 20. However, the Examiner does not rely on these additional references to remedy the deficiencies in the combination of Coleman and Ikushima discussed above. Accordingly, we reverse each of the Examiner's obviousness rejections.

#### CONCLUSION

Upon consideration of the record and for the reasons set forth above and in the Appeal and Reply Briefs, the Examiner's decision to reject claims 20–32 and 38 under pre-AIA 35 U.S.C. § 103(a) as unpatentable over the combination of Coleman and Ikushima, alone or further in view of Ono or Edwards, is *reversed*.

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
20, 25–32, 38	103(a)	Coleman, Ikushima		20, 25–32, 38
21–23	103(a)	Coleman, Ikushima, Ono		21–23
24	103(a)	Coleman, Ikushima, Edwards		24
<b>Overall Outcome</b>				<b>20–32, 38</b>

REVERSED